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WHAT IS CLAIMED IS:

1. A temperature controlled ventilation system for a seat, comprising:

a supply side heat exchanger forming a hole therein about an axis of rotation and configured to allow air to pass outward from said axis of rotation;

a waste side heat exchanger forming a hole therein about said axis of rotation and configured to allow air to pass outward from said axis of rotation;

a thermoelectric device having opposing surfaces that generate elevated temperatures on one surface and reduced temperatures on the opposing surface depending on the electrical potential applied to the thermoelectric device, one opposing surface being connected to and in thermal communication with the supply side heat exchanger and the other opposing surface being connected to and in thermal communication with the waste side heat exchanger;

a motor drivingly connected to at least one of the heat exchangers or thermoelectric device to rotate the heat exchangers about the axis of rotation to cause air to enter at least one of the holes and pass outward through the heat exchanger;

a housing containing at least the supply heat exchanger and forming an outlet through which air exits after passing through the supply heat exchanger;

a seat of a motor vehicle having a surface against which a person rests, the surface having passages therethrough in at least a portion of the surface where the person rests, the surface being in fluid communication with the outlet of the supply heat exchanger, the heat exchanger and motor rotation cooperating so air from the heat exchanger is forced through the surface to provide conditioned air in the area where the passenger rests against the surface.

2. A system as defined in Claim 1, wherein the housing encloses both heat exchangers and further comprising an insulating layer between the first and second heat exchangers that extends radially outward toward the housing to form an insulated barrier between the supply and waste heat exchangers

3. A system as defined in Claim 1, additionally comprising a wicking material being connected ~~to~~ at least a portion of the housing and having a first portion in contact with air exiting the supply heat exchanger and having a second portion in contact with air exiting the waste heat exchanger so that if one of the heat exchangers

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generates moisture the wicking material conducts the moisture away from the heat exchanger producing the moisture.

4. A system as defined in Claim 1, wherein the combined height of the heat exchangers and thermoelectric device is less than about 30 mm when measured along the rotational axis.

5. A system as defined in Claim 1, wherein the housing encloses both heat exchangers and further comprising an insulating layer between the first and second heat exchangers that extends radially outward toward the housing to form an insulated barrier between the supply and waste heat exchangers.

6. A system as defined in Claim 1, wherein the heat exchangers comprise annular heat exchangers forming annular holes, with the motor nesting into at least one of said annular holes.

7. A system as defined in Claim 6, further comprising a wicking material connected to at least a portion of the housing and having a first portion in contact with air exiting the supply heat exchanger and having a second portion in contact with air exiting the waste heat exchanger so that if one of the heat exchangers generates moisture the wicking material conducts the moisture away from the heat exchanger producing the moisture.

8. A system as defined in Claim 7, wherein the housing further encloses the waste side heat exchanger and has a waste side outlet in fluid communication with a passage that exhausts the air from the waste side of the heat exchanger.

9. A system for use with a seat having a surface in fluid communication with a heat exchanger, comprising:

a first heat exchanger having an outlet in fluid communication with the surface of the seat, the first heat exchanger comprising:

an electronic element selected to generate heat in response to an electrical current;

a heat exchanger connected to and in thermal communication with the electronic element, the heat exchanger comprising a first series of heat exchange surfaces rotatable about a rotational axis and configured to transfer a temperature differential from the electronic element, the electronic element and the heat exchanger

being connected to rotate about the rotational axis so that the first series of heat exchange surfaces generates a fluid flow across the heat exchange surfaces.

10. The system of Claim 9, wherein the electronic element comprises a thermoelectric device that has opposing surfaces comprising a first junction on one surface and a second junction on an opposing surface, with the first junction being at a higher temperature than the second junction when electrical current is applied to the thermoelectric element in a first direction, and with the first junction being at a lower temperature than the second junction when the electrical current is applied to the electronic element in a second direction.

11. The system of Claim 9, wherein the heat exchanger additionally comprises a second heat exchanger connected to and in thermal communication with the second junction of the thermoelectric element, the second heat exchanger comprising a second series of heat exchange surfaces rotatable about a rotational axis and configured to transfer a temperature differential from the second junction, the second heat exchanger being connected to rotate about the rotational axis with the first heat exchanger so that the second series of heat exchange surfaces generates a fluid flow across the second series of heat exchange surfaces.

12. The system of Claim 11, wherein at least one of the first and second series of heat exchange surfaces form substantially flat sheets extending outward from the rotational axis and define a series of spaces between the blades.

13. The system of 11, wherein the fluid comprises a gas and at least one of the first and second series of heat exchange surfaces are separated by a distance in the range of approximately 0.5-2 mm.

14. The system of 12, wherein the fluid comprises a gas and at least one of the first and second series of heat exchange surfaces are separated by a distance in the range of approximately 0.5-2 mm.

15. The system of 11, wherein the fluid comprises a gas, the heat exchangers comprise annular heat exchangers and the combined height of the heat exchangers and thermoelectric element is less than about 30 mm measured along the rotational axis.

16. The system of 12, wherein the fluid comprises a gas, the heat exchangers comprise annular heat exchangers and the combined height of the heat exchangers and the thermoelectric element is less than about 30 mm measured along the rotational axis.

17. The system of Claim 13, wherein the fluid comprises a gas and at least one of the first and second series of heat exchange surfaces are of thermally conductive material and have a thickness in the range of approximately 0.05-0.2 mm.

18. The system of Claim 14, wherein the fluid comprises a gas and at least one of the first and second series of heat exchange surfaces are of thermally conductive material and have a thickness in the range of approximately 0.05-0.2 mm.

19. The system of Claim 15, wherein the fluid comprises a gas and at least one of the first and second series of heat exchange surfaces are of thermally conductive material and have a thickness in the range of approximately 0.05-0.2 mm.

20. A system for providing conditioned fluid to a seat, comprising:

an electronic device selected to convert electrical energy into thermal energy producing a temperature change in response to an electrical current being applied thereto, the electronic device being mounted to rotate about a rotational axis;

a heat transfer device having an outlet in fluid communication with the seat, the heat transfer device comprising:

a rotatable flow generating device configured to produce a fluid flow in response to rotation thereof about the axis, the flow generating device further being in conductive thermal communication with the electronic device so that the airflow generating device conducts the temperature change generated by the heat transfer device to transfer the temperature change to the fluid flowing across the heat transfer device.

21. The system of Claim 20, wherein the electronic device comprises a thermoelectric device.

22. The system of Claim 20, wherein the flow generating device comprises a series of radially-extending heat exchange surfaces connected to a first surface of a thermoelectric device.

23. The system of Claim 21, wherein the flow generating device comprises a first series of outwardly-extending heat exchange surfaces connected to and in thermal communication with a first surface of the thermoelectric device, and a second series of outwardly-extending heat exchange surfaces connected to an opposing, second surface of the thermoelectric device.

24. A temperature controlled ventilation system for a seat, comprising:

means for producing a temperature differential; and

supply side heat exchanger means for conducting said temperature change, said heat exchanger means further comprising fluid flow generating means for causing fluid to flow across said heat exchanger means, said supply side heat exchanger means being in fluid communication with the seat.

25. A temperature controlled ventilation system for a seat having a fluid distribution system in fluid communication with the seat, comprising:

a first fan rotating about a rotational axis and having a first plurality of heat exchange elements configured to generate a fluid flow through the heat exchange elements when rotated and in conductive thermal communication with an electronic device that converts electrical energy into a temperature change, the fan being enclosed in a housing that has an outlet in fluid communication with the fluid distribution system.

26. A system as defined in Claim 25, wherein the electronic device comprises a thermoelectric device having a first side in thermal communication with said fan, and further comprising a second fan having a second plurality of heat exchange elements in conductive thermal communication with a second side of the thermoelectric device to conduct a temperature differential from said second side of the thermoelectric device, the second fan being enclosed in a housing that has an outlet in fluid communication with an exhaust port.

27. The system of Claim 26, wherein at least one of the first and second plurality of heat exchange elements form substantially flat sheets extending radially outward from the rotational axis and define a series of spaces between the blades.

28. The system of Claim 26, wherein the fluid comprises a gas and at least one of the first and second plurality of heat exchange elements are separated by a distance in the range of approximately 0.5-2 mm.

29. The system of Claim 26, wherein the fluid comprises a gas and the height of the fans and thermoelectric device is less than about 30 mm measured along the rotational axis.

30. The system of Claim 26, wherein the fluid comprises a gas and at least one of the first and second plurality of heat exchange elements are of a high thermal conductivity material and have a thickness in the range of approximately 0.05-0.2 mm.

31. A system of Claim 26, further comprising a wicking material having a first portion in contact with a gas exiting the first plurality of heat exchange elements and having a second portion in contact with a gas exiting the second plurality of heat exchange elements to conduct any moisture away from the housing in which the moisture is produced.

32. A method for providing temperature controlled ventilation to a seat having a seat surface, comprising the steps of:

forming a supply side heat exchanger rotating about an axis of rotation and configuring the heat exchanger to allow fluid to pass therethrough;

forming a waste side heat exchanger rotating about said axis of rotation and configuring the waste side heat exchanger to allow fluid to pass therethrough;

providing a thermoelectric device having opposing surfaces that generate elevated temperatures on one surface and reduced temperatures on the opposing surface depending on the electrical potential applied to the thermoelectric device, and conductively connecting one opposing surface of the thermoelectric device to the supply side heat exchanger and conductively connecting the other opposing surface to the waste side heat exchanger;

rotating at the heat exchangers and thermoelectric device about the axis of rotation to cause fluid to pass through the heat exchanger;

enclosing the supply heat exchanger and forming an outlet through which fluid exits after passing through the supply heat exchanger; and

placing the seat surface in fluid communication with the outlet of the supply heat exchanger.

33. A method as defined in Claim 32, comprising the further step of enclosing both heat exchangers and insulating the first and second heat exchangers from each other.

34. A method for use with a seat having an exterior surface where a person rests, comprising the steps of:

placing a first heat exchanger having a fluid outlet in fluid communication with the exterior surface of the seat and mounting the heat exchanger to rotate about a rotational axis;

placing the first heat exchanger in conductive thermal communication with an electrical device that is selected to generate a temperature change when an electrical current is applied to the electrical device; and

rotating the first heat exchanger about the axis to force fluid through the heat exchanger while conditioning the temperature of the fluid passing over the heat exchanger.

35. The method of Claim 34, wherein the step of placing the heat exchanger in thermal communication with an electrical device comprises the step of placing the first heat exchanger in thermal communication with a first surface of a rotating thermoelectric device.

36. The method of Claim 35, comprising the further steps of:

placing a second heat exchanger in conductive thermal communication with a second surface of the thermoelectric device; and

rotating the second heat exchanger about the axis with the first heat exchanger to force fluid through the second heat exchanger while conditioning the fluid passing through the second heat exchanger;

37. The method of Claim 36, comprising the further step of forming at least one of the first and second heat exchangers to have a series of heat exchange elements formed of substantially flat sheets extending radially outward from the rotational axis and define a series of spaces between the blades.

38. The method of Claim 37, comprising the further step of separating said series of heat exchange elements by a distance in the range of approximately 0.5-2 mm.

39. The method of Claim 36, comprising the further step of forming the first and second series of heat exchange elements and the thermoelectric device to have an annular shape and a combined height that is less than about 30 mm measured along the rotational axis.

40. The method of Claim 36, comprising the further step of forming the series of heat exchange elements of a thermally conductive material with a thickness in the range of approximately 0.05-0.2 mm.

41. The method of Claim 36, comprising the further step of placing the heat exchangers inside the seat.

42. A method of providing temperature controlled ventilation to an seat, comprising the steps of:

producing a temperature differential; and

conducting said temperature differential to a heat exchanger to condition a fluid flowing across the heat exchanger;

rotating said heat exchanger to cause the fluid to flow across the heat exchanger;

placing fluid from the heat exchanger in fluid communication with the seat.

43. A method for providing temperature controlled ventilation to an seat having an fluid distribution system in fluid communication with the seat, comprising the steps of:

generating a temperature differential by an electronic device that is selected to convert electrical energy into a temperature change;

placing a first plurality of heat exchange surfaces of a first fan in conductive thermal communication with the electronic device to conduct the temperature differential through the heat exchange surfaces;

rotating the first fan about a rotational axis to cause the fluid to pass over the heat exchange surfaces to condition the fluid;

enclosing the fan in a housing that has an outlet; and

placing the outlet in fluid communication with the fluid distribution system.

44. A method defined in Claim 43, wherein the electronic device comprises a thermoelectric device having a first side in thermal communication with said fan, and further comprising the steps of providing a second fan having a second plurality of heat exchange surfaces placed in conductive thermal communication with a second side of the thermoelectric device to conduct a temperature differential from said second side of the thermoelectric device, and rotating the second fan with the first fan, and enclosing the second fan in a housing that has an outlet in fluid communication with an exhaust port.

45. An apparatus for thermally conditioning a fluid, comprising:

an electronic device selected to convert electrical energy into thermal energy producing a temperature change in response to an electrical current being applied thereto, the electronic device being mounted to rotate about a rotational axis;

a heat transfer device in conductive thermal communication with the electronic device and being mounted to rotate about the axis, the heat transfer device having thermally radiating surfaces arranged to produce a fluid flow across the surfaces when rotated about the axis.

46. The system of Claim 45, wherein the electronic device comprises a thermoelectric device.

47. The apparatus of Claim 45, wherein the heat transfer device comprises a first series of outwardly-extending thermally radiating surfaces connected to a first surface of the electric device.

48. The apparatus of Claim 46, wherein the heat transfer device comprises a first series of thermally radiating surfaces connected to a first surface of the thermoelectric device, and a second series of thermally radiating surfaces connected to an opposing, second surface of the thermoelectric device.

49. The apparatus of Claim 48, wherein the heat transfer device is contained in a housing having at least one outlet in fluid communication with a seat.

50. An apparatus for thermally conditioning a fluid, comprising:

means for producing a temperature change; and

rotating supply side heat exchanger means for conducting said temperature change, said heat exchanger means further comprising fluid flow generating means for causing fluid to flow across said heat exchanger means.

51. The apparatus defined of Claim 50, wherein said fluid comprises a gas and said supply side heat exchanger means is in fluid communication with a seat to provide gas from the heat exchanger means to the seat.

52. A temperature conditioning fluid moving device, comprising:

a first fan rotating about a rotational axis and having a first plurality of heat exchange surfaces in conductive thermal communication with an electronic device that converts electrical energy into a temperature change, the fan being enclosed in a housing that has an outlet.

53. A device as defined in Claim 52, wherein the electronic device comprises a thermoelectric device having a first side in thermal communication with said fan, and further comprising a second fan having a second plurality of heat exchange surfaces in conductive thermal communication with a second side of the thermoelectric device to conduct a temperature change from said second side of the thermoelectric device, the second fan being enclosed in a housing that has an outlet.

54. A device as defined in Claim 53, wherein at least one of the outlets is in fluid communication with a seat.

55. A device as defined in Claim 53, wherein at least some of the heat exchange surfaces form substantially flat sheets extending outward from the rotational axis and define a series of spaces between the sheets.

56. A device as defined in Claim 53, wherein the at least one of the first and second series of heat exchange surfaces are separated by a distance in the range of approximately 0.5-2 mm.

57. A device as defined in Claim 53, wherein the fans have an annular shape and the height of the fans and thermoelectric device is less than about 30 mm measured along the rotational axis.

58. A device as defined in Claim 53, wherein at least one of the first and second plurality of heat exchange surfaces are of a thermally conductive material and have a thickness in the range of approximately 0.05-0.2 mm.

59. A method for thermally conditioning a fluid, comprising the steps of:

forming a supply side heat exchanger rotating about an axis of rotation and configuring that heat exchanger to pass the fluid therethrough;

forming a waste side heat exchanger rotating about said axis of rotation and configuring the waste side heat exchanger to allow gas to pass through;

providing a thermoelectric device having opposing surfaces that generate elevated temperatures on one surface and reduced temperatures on the opposing surface depending on the electrical potential applied to the thermoelectric device, and conductively connecting one opposing surface of the thermoelectric device to the supply side heat exchanger and conductively connecting the other opposing surface to the waste side heat exchanger;

rotating the heat exchangers and thermoelectric device about the axis of rotation to cause gas to pass through the heat exchangers; and

enclosing the supply heat exchanger and forming an outlet through which gas exits after passing through the supply heat exchanger.

60. A method as defined in Claim 59 wherein the step of forming the supply side heat exchanger comprises forming the heat exchanger with a hole therein about said axis of rotation and configuring that heat exchanger to allow gas to pass outward from said axis of rotation;

and wherein said step of forming a waste side heat exchanger comprises the step of forming a hole therein about said axis of rotation and configuring the waste side heat exchanger to allow gas to pass outward from said axis of rotation; and

wherein said step of rotating the heat exchangers and thermoelectric device about the axis of rotation causes fluid to enter at least one of the holes and pass outward through the heat exchanger.

61. A method as defined in Claim 59, comprising the further steps of:

placing a seat in fluid communication with the outlet of the supply side heat exchanger.

62. A method for thermally conditioning and moving a fluid, comprising the steps of:

forming a first heat exchanger having radiative surfaces aligned to allow the passage of gas outward from an axis about which the heat exchanger rotates;

placing the first heat exchanger in conductive thermal communication with an electrical device that generates a temperature change when an electrical current is applied to the electrical device; and

rotating the first heat exchanger about the axis.

63. The method of Claim 62, wherein the step of placing the heat exchanger in thermal communication with an electrical device comprises the step of placing the first heat exchanger in thermal communication with a first surface of a thermoelectric device.

64. The method of Claim 63, comprising the further step of placing the heat exchanger inside a seat.

65. A method of providing temperature controlled fluid, comprising the steps of:

producing a temperature change by an electronic device; and

conducting said temperature change to a heat exchanger having radiative surfaces; and

rotating said heat exchanger to cause fluid to flow across the radiative surfaces of the heat exchanger.

66. A method as defined in Claim 65, comprising the further step of placing fluid from the heat exchanger in thermal communication with a seat.

67. A method as defined in Claim 65, comprising the further step of circulating fluid conditioned by at least a portion of the heat exchanger to the interior of a chamber.

68. A method as defined in Claim 67, comprising the further step of thermally insulating the chamber and providing an closable opening to allow access to the interior of the chamber.